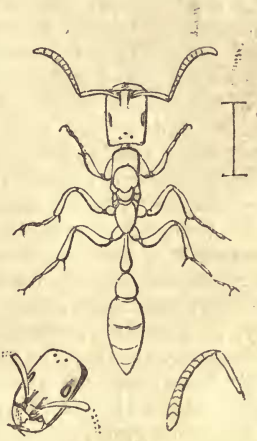
VI.—*Descriptions of some Hymenopterous Insects captured in India, with notes on their Œconomy, by* Ezra T. Downes, Esq., *who presented them to the Honourable the East India Company.* By Frederick Smith, Assistant Zoological Department, British Museum.

Genus Tetraponera.

Head elongate, sides parallel, the vertex slightly emarginate; eyes ovate, lateral, stemmata three, situated on the vertex; the antennæ 12-jointed, geniculate, subclavate, inserted in the sides of a raised prominence above the base of the clypeus; the mandibles stout, dentate, subarcuate, very broad at their apex, apical teeth crossing, slightly narrowed at their base. Thorax elongate, obtusely rounded at base and apex; legs moderate in length. Abdomen elongate, the two basal segments constricted, forming two nodes, the first half the width of the second; petiole elongate ovate, the second segment globose, the remaining portion of the abdomen elongate ovate.

Tetraponera atrata.



Female (length 4½ lines) black, shining, the antennæ dark fusco-ferruginous, the basal joint one-third of their entire length; the mandibles rugose, pubescent, their apical tooth long and acute; the prothorax transverse in front, the anterior coxæ dilated, compressed at their sides, the claws rufo-testaceous, the calcaria testaceous. The abdomen has here and there a long hair or bristle, particularly on the first node of the abdomen and at the apex, the margins of the fourth and fifth segments narrowly piceous at their apical margins.

Hab. Bombay.

This insect as far as I know is unique, nor will it fall into any established genus; in some characters it approaches *Myrmecia*, the abdomen closely resembling that of the insects of that genus, but the head and thorax are totally different, there being no constriction between the meso- and meta-thorax; it also approaches the *Condylodon* of Lund in having short stout toothed mandibles, but it has small lateral eyes similar to *Ponera*. I should therefore assign it a place between *Ponera* and *Condylodon*.

I am only acquainted with one other species belonging to this genus; it is from South America, and is in the National Collection at the British Museum. I subjoin a description of the insect in a note *.

Genus Hedychrum.

Hedychrum rugosa, n. s.

Length 3 lines. Head and thorax golden green, rugose-punctate; the eyes, antennæ and tegulæ black, the scape of the antennæ tinged with green; the tarsi rufo-piceous, the punctures on the scutellum and metathorax very large. The abdomen is green with a blue reflection, much more finely punctured than the thorax, except the sides of the basal segment which are rugose.

Hab. Poona.

Genus Chrysis.

Chrysis pubescens, n. s.

Length $3\frac{1}{2}$ lines. Head and thorax brassy-green, rugose-punctate; the eyes and antennæ black, except the basal joint, which is brassy-green; the anterior margin of the prothorax deeply incurved, receiving the vertex of the head, the metathorax produced laterally into obtuse spines; the tegulæ and legs brassy-green, the tarsi rufo-testaceous; the wings dark fuscous, somewhat paler at their apical margins. Abdomen green, with a blue reflection, the apical segment chalybeous, quadridentate; the whole abdomen deeply punctured, and having, as well as the head and thorax, a short thin pubescence.

Hab. Bombay.

This species is parasitic on *Pelopæus*; the following are Capt. Downes's remarks: "A nest of *Pelopæus* was taken on the wall of my room; several of the cells were broken down whilst removing them, and various sorts of spiders fell out; one of the cells was a little denuded of its mud, so that I could see inside; this hole was repaired next day by a thin substance like talc, and

* *Tetraponera testacea.*

Female (length $3\frac{1}{2}$ lines) testaceous, smooth and shining; the head elongate, truncate in front and behind, slightly emarginate at the vertex, a shallow impressed line running from the anterior stemma to the base of the antennæ, where it terminates in a deep sulcation carinate on its sides; the eyes black, the mandibles ferruginous, roughly channelled longitudinally with irregular striations, the teeth black; the mesothorax is darker than the rest of the thorax, and has a longitudinal scratch on each side; the metathorax is rounded posteriorly, very smooth and shining; the abdomen has a few scattered long hairs at its apex, and also on both its nodes; the third segment is also slightly constricted.

Hab. Napo, S. America.

In the collection of the British Museum.

if the cell reaches you safely, you will see what I mean; although the substance has been broken a little, it *was* quite perfect, and had the appearance of a little window. In another exposed cell was a *Chrysis*: by some means those enemies to everything, the red ant, found it out, and soon exposed the pupa; however, it was in a sufficiently forward state to show what it would have been. The *Pelopæus* made its appearance on the 4th of July; the nest just finished was taken on the 11th June 1848."

The "thin substance like talc" was the pupa-case spun by the *Pelopæus*; it still lines the mud cell, is transparent, and of brown colour.

Genus Scolia.

Scolia fervida, n. s.

Female (length 8 to 9 lines) black, the face coarsely punctured; eyes ovate, notched within, between the eyes in a fossulet a single ocellus and a curved impressed line above it; the margin of the vertex is punctured, but between this and the curved impression it is smooth and shining. Thorax deeply punctured, having two parallel smooth oblong spaces on the mesothorax smooth and shining; the wings dark fuscous, having a purple reflection, and having two submarginal and one recurrent nervure; the legs short, stout, and densely clothed with coarse black pubescence. Abdomen, the second segment has two lateral red maculæ varying in size, sometimes united; the second and third red, as also in some instances the base of the fourth.

Hab. Poona.

This species is one that presents variable characters as follows: one or two red spots in front of the ocellus, a red spot at the vertex of the eyes, also on each side of the collar, a lateral dark stain on the spots and segments of the abdomen; all these are more or less present in different individuals: in general appearance it approaches the *Scolia 4-pustulata* of Fabricius, but differs so much in the sculpture of the head and thorax as to remove all doubt of its being distinct.

Genus Ammophila.

Ammophila atripes, n. s.

Female (length 10 lines) black, the face adorned with silvery pile; the scape of the antennæ ferruginous in front; the prothorax and mesothorax transversely irregularly striate; the metathorax rugose; the tubercles covered with silvery pile, the tegulæ rufo-piceous, the wings fusco-hyaline, darkest at their tips; the femora, tibiæ, and basal joint of the tarsi red, the apical joints black; claws red, metathorax transversely striate. Abdomen,

the basal joint red, the second joint dark fusco-ferruginous, the rest of the segments of a violet blue.

Hab. Khandala; 1800 feet above the level of the sea.

Genus Pelopæus.

Pelopæus bilineatus, n. s.

Female (length 8½ lines) black, the scape of the antennæ yellow in front; the prothorax has two yellow transverse spots nearly touching; the tegulæ, a perpendicular line beneath them, the post-scutellum, and two parallel oblong stripes on the metathorax, yellow; the apical half of the anterior femora and the tibiæ, the apical half of the intermediate femora, the tibiæ, the apical half of the basal joint of the tarsi, the trochanters, base of the femora and tibiæ, and basal joint of the tarsi of the posterior legs, yellow. Abdomen, the petiole yellow, the other segments beautifully aciculate.

Hab. Bombay.

I cannot find any description answering to the present species, and although some other species have the surface of the abdomen aciculate, still it is more beautiful and conspicuously so in this than in any species which I have seen. It was upon this insect that the *Chrysis pubescens*, described above, was parasitic. This fact, if any were wanting, since I have already published an account of *Chrysis* being reared from the nests of *Odynerus* and also of *Osmia*, proves that the parasite feeds on the larva, and not on the food stored up. *Pelopæus* provisions its nest with spiders; *Odynerus*, with lepidopterous larvæ; and *Osmia*, with the pollen of flowers.

Pelopæus separatus.

This insect only differs from the preceding in wanting the yellow spots on the collar and the two oblong stripes on the metathorax; the abdomen is sculptured precisely as in *P. bilineatus*, and the present insect is very probably only a variety.

Hab. Bombay.

In a letter, Col. Downes states that the nests of this species were constructed in his apartment, and he discovered one day that they were partly destroyed by *red ants*. In a partly demolished cell he observed an insect nearly matured; this proved to be the *Hedychrum rugosa* described above; thus we learn that species of *Hedychrum* and also of its ally *Chrysis* are parasites on the *Pelopæi*.

Genus Epipona.

Epipona marginata, St. Farg. Hist. Nat. Ins. i. 541. 3.

Of this species Col. Downes says, "I must call your attention

to one of the *Hymenoptera,* which you will find with its cells: I have confirmed what I never had an opportunity of doing before, although it has been stated by authors that the young are fed by the parent; such was the case in this instance, as I had daily opportunities of seeing the larva fed. A single egg is deposited in each cell very soon after the commencement of it, and the cell is built up as the larva grows, not finished at once; and the parent possesses the necessary instinct to close the cells when the larvæ are ready to undergo their change."

This is a very interesting note, and shows how closely these smaller communities of wasps resemble those of the more populous species of *Vespidæ*. The common wasp of Europe, the *V. vulgaris,* deposits her eggs in cells which are only raised about the eighth of an inch; and as the larva grows the cells are built up. But I do not feel at all satisfied that the working wasps close the cells as soon as the larvæ are full-fed. On dissolving the comb of a wasp's nest, it will be found that the covering is not merely over the mouth of the cell, but that it is continued down the sides within, varying in extent in different species. I cannot but think that the cells are closed by the larvæ themselves, not only in wasp communities, but also in those of the social *Apidæ*.

The nest of this species is similar to that of *Polistes,* being merely a comb of exposed cells twenty-five in number, from six of which the perfect insect has come forth, the other cells being of different heights; but all contain either an egg, a larva, or a pupa.

Epipona variegata.

Female (length $3\frac{1}{2}$ lines) ferruginous, a line within the eyes reaching the emargination, the clypeus and a spot above it between the antennæ, the scape in front, the mandibles and a broad line behind the eyes, yellow; the clypeus has a ferruginous stain in the centre. Thorax, the anterior margin of the metathorax, the collar, tegulæ, a spot beneath the wings, the anterior margin of scutellum, the post-scutellum, two ovate maculæ on the metathorax, two spots on the breast, the coxæ in front, and a line on the anterior and intermediate femora beneath, and also a line on all the tibia above, yellow. Abdomen, a minute spot at the apical margin of the peduncle, two ovate maculæ at the base of the second segment and a broad band at its apical margin, yellow; a fuscous spot occupies the apical half of the marginal cell.

Hab. Poona.

This species was accompanied by its nest, which consists of a single comb of cells about an inch in length and half an inch

broad; it has nineteen cells, nine of which are perfect: from five have emerged perfect insects, and four contain pupæ more or less advanced towards perfection: the comb is attached to a leaf by a slender footstalk.

Genus Ancistrocerus.

Ancistrocerus ornatus, n. s.

Male (length $4\frac{1}{2}$ lines) ferruginous, the clypeus and face as high as the top of the notch of the eyes, the scape of the antennæ in front, the mandibles and cheeks yellow; the stemmata are inclosed in a coronet-shaped black spot on the vertex; the margin of the prothorax, the tegulæ and posterior portion of the tubercles, the anterior and intermediate tibia and tarsi, also their coxæ in front, yellow; the lateral margins of the scutellum and post-scutellum and also the margin of the collar narrowly stained more or less with yellow; all the impressed divisions of the parts of the thorax are stained more or less black; a dark fuscous spot occupies the marginal cell, extending a little beyond; abdomen, the apical margins of the segments are more or less of a yellowish tinge, as is also the second segment beneath; the second and third segments above are black at their basal margins.

Hab. Bombay.

This is a very beautiful and apparently undescribed species; it is from Bombay.

Ancistrocerus guttatus.

Female (length $4\frac{1}{2}$ lines) black: the clypeus, base of the mandibles, the scape of the antennæ, a line running from the clypeus and filling the notch of the eyes, and an elongate-ovate macula behind the eyes near the vertex, bright yellow; a black line on the scape behind at its apex; the clypeus bidentate at its apex; a broad macula on each side of the prothorax touching in the centre, the tegulæ, a round spot beneath the wings, the scutellum and post-scutellum, a large ovate macula on each side of the metathorax, the intermediate and posterior coxæ, spotted with yellow; all the femora, tibiæ and tarsi yellow; the posterior femora are only yellow towards the apex beneath, and the tarsi are stained ferruginous; the costal and externo-medial cell have a slight fuscous cloud as well as the apical margins; a dark fuscous spot is inclosed in the marginal cell. Abdomen, the margins of all the segments and a large round macula on each side of the second segment yellow; beneath, a broad yellow fascia occupies the apical margin of the second segment and is bisinuate.

Hab. Khandala.

Genus Prosopis.

Prosopis mixtus.

Female (length $2\frac{1}{4}$ lines) black; the clypeus cream-coloured; the tubercles and tegulæ white; the wings white, hyaline; all the tarsi pale ferruginous; the pubescence on the posterior legs white; the margins of the abdominal segments testaceous; the disk of the thorax is very smooth and shining.

Hab. Ind.

Although I have placed this insect in the genus *Prosopis*, I do not feel quite satisfied that it belongs to it; in the neuration of the wings it exactly corresponds with that genus. I cannot examine the tongue, and the specimen described is much mutilated and gummed to a piece of card, and is altogether in bad condition. I have described it, believing it to be an *Hylæus*, as it is to me a new habitat for the genus.

BIBLIOGRAPHICAL NOTICES.

A Naturalist's Sojourn in Jamaica. By P. H. Gosse. 1851. 12mo. Longman and Co.

There are perhaps few parts of the world of whose natural productions we know less than those of our own West Indian Colonies. At first sight this may appear rather surprising, considering the number of Europeans constantly residing in those beautiful islands; but as most of these regard the old country as their home, and their sojourn in the West Indies only as a means of making money, they are still, as in the time of Bancroft, "more attentive to the acquisition of wealth than natural knowledge." Occasionally indeed some clergyman or medical man does pay a little attention to the natural objects which surround him; but the number of these exceptions is but small, whilst few of them ever do more for the preservation and publication of their observations than the insertion of a notice of some remarkable occurrence in one of the innumerable 'St. George's Chronicles' or 'Kingston Gazettes,' or an occasional article in one of those red-covered almanacs, which, to European eyes, have such a curiously exotic appearance.

The natural history of Jamaica has once or twice engaged the attention of naturalists and been made the subject of a special treatise, but much remained to be done,—how much, the present delightful volume, the result, or rather part of the result, of a "sojourn" of only nineteen months in the island, will abundantly show.

Mr. Gosse is too well known as an acute observer of nature, and his reputation as an agreeable writer is too well established, to leave much doubt in the minds of our readers that a book from his pen on the natural history of Jamaica, perhaps the most beautiful of tropical islands, will contain an abundance both of information and entertain-